Professor Jan Zima

14 August 1952 - 26 March 2019

Photo: Jaroslav Červený

On Tuesday, March 26th, 2019, Jan Zima peacefully passed away on his home in the district of Bystrc, city of Brno, Czech Republic. The previous evening he was still working, but needed urgent medical help on Tuesday morning. The intervention arrived too late. Despite this, there was probably little left what medical could still do. In 2015, Jan (Honza to his friends) was diagnosed with an invasive type of cancer. The surgery, which followed in the autumn, first raised hopes but it soon became apparent that the disease could not be cured. Since then, Honza's health steadily deteriorated. He was well aware that his chances were poor, and carried this burden most stoically, never complaining but fully controlling his emotions. Wholly in line with his character, Honza resumed his duties shortly after the surgery and continued to work hard till the very last day of his life. The funeral was on April 3rd, and the urn was placed in a cemetery at Klínec, a village near Prague. Honza was survived by his wife Irena, two daughters (Marketa and Barbora), son Jan, and ten grandchildren.

Honza was born on 14 August 1952 in Prague, in the Czech part of what was then still Czechoslovakia. His father made a name in research on electronics and radio communications, and one of his grandfathers published extensively on agricultural issues. The other grandfather, who was collecting butterflies and beetles, introduced Honza to natural history. Honza attended a secondary school in Prague. At that time he was playing ice-hockey, although, in his own words, he had never been too enthusiastic about sports. He was also prone to forbidden pleasures and once the schoolmaster caught him smoking in ladies' toilet. The socialistic Czechoslovakia offered youngsters a variety of organized activities and Honza joined a naturalist club for youth. There he met Ivan Horáček and Jaroslav Červený, both of whom also made respectful academic careers in mammalogy and became his life-long friends. The club regularly organised trips and summer

expeditions throughout the former Czechoslovakia. At that time, Honza was already firmly in the grasp of natural history, at first geology and speleology, but finally decided to opt for life sciences. In 1970 he won the national competition at the Biological Olympics, and entered in that same year the Faculty of Science at the Charles University. He graduated from biology in 1975. The topic of his diploma thesis was chromosomal research in bats and in decades to follow Honza made his name from mammalian karyology more than from any other biological disciplines. In 1981, Honza defended his doctoral thesis under the tutorship of Professor Oldřich Štěrba and submitted his DSc thesis at the Academy of Sciences in the mid-1990s.

Honza's first position was at the Institute of Vertebrate Zoology of the Czechoslovak Academy of Sciences in Brno and he worked there from 1976 to 1993. At that time, the Director Joseph Kratochvíl succeeded to position the Institute among the leading institutions in mammal research in Europe. In 1978, the Institute organized the 2nd International Theriological Congress which gathered mammalogists from all five continents. Honza, as a member of the organizing committee, actively went through all stages of organising a large international meeting. His organizational skills soon became apparent and appreciated. But perhaps more importantly, he made international contacts which were crucial for his future career. In his own words, it was the Congress which placed him on the international stage of mammalogy. Perhaps more correctly, Honza was capable of making the best of the opportunities he had. The World was still polarized in those times and divided by the Iron Curtain which put scientists on to the eastern side in disadvantageous position. Be it as it may, while the international contacts opened the door for Honza to the international science, his organizational skills, brilliancy in execution of tasks, capability of working long and hard, and scientific competency, provided for promotions also at the Institute itself. In addition to technical skills, Honza was also a patient interlocutor and people liked working with him and under his guidance. He was a born leader. Unsurprisingly, Honza soon assumed a duty of Scientific Secretary. Between 1993 and 1998, he was appointed Head of laboratory at the Institute of Animal Physiology and Genetics of the Academy of Sciences in Brno, but he returned in 1998 to the Institute of Vertebrate Zoology, now operating under the name Institute of Vertebrate Biology. First, he served as Chairman of the Scientific Board but was appointed as Director in March 2000. In 2009, he was elected a Member of the Academy Council of the Academy of Sciences of the Czech Republic and kept the office until 2017. In the mid-1990s, Honza submitted his DSc thesis at the Academy of Sciences and the habilitation thesis at the Charles University (in 1997). In 2004, he was elected Full Professor at the Masaryk University in Brno.

Throughout most of his career, Honza was simultaneously a researcher, organizer, administrator and decision maker, as well as university teacher and supervisor of MSc and PhD projects. Active research, however, was at all times in front of other matters. Comparative and evolutionary cytogenetics of mammals captured his interest while still an undergraduate student and some of his very last papers were still in karyology. Honza certainly had a deep knowledge in cytogenetics and an ample first-hand experience in the topic. His real interest, however, lay in mammals. In his eyes, chromosomal information was useful in defining mammalian taxa as objectively as possible and in allowing deeper insight into phylogenetic relationships at different levels of taxonomic organization. One should keep in mind that Honza started his career long before the advent of PCR amplifications and genome sequencing. In early 1970s, cytogenetics was among the few research methods available for detecting cryptic species and hybrid zones. Unsurprisingly, Honza was particularly attracted by chromosomal polymorphism in a common shrew *Sorex araneus*, taxonomic diversity among morphologically similar *Microtus* voles, and the presence of supernumerary (*B*) chromosomes in *Apodemus* mice. Chromosomal variation in common shrew was at those times a topic of immense interest among mammalogists. Shrews provide and early evidence that morphologically similar mammals can be profoundly different genetically. Or to put

Jan Zima with his wife Irena during the conference "Zoological Days" (Zoologické dny). Brno, February 2011. Photo: Jaroslav Červený

it differently, it became clear that there were more species of mammals that traditional taxonomy, based on morphology and museum vouchers, was capable to detect. It was the time that put an end to the "taxonomic inertia", personified in the influential synthesis on the Palaearctic Mammals by Ellerman & Morrison-Scott (1951). Mammalogists simply had to start thinking differently and chromosomal research was opening new horizons. Through a study of chromosomes we were gaining a more realistic perception of mammalian diversity at the species level. In those dynamic years, Honza was a prominent actor in research. He actively worked on the karyology of nearly every genus of European mammals, described for the first time the karyotype in about 20 species of mammals, and participated in the descriptions of nine new chromosomal races of the common shrew. As an excellent field biologist, Honza trapped a significant proportion of small mammals which he karyotyped. He attended a number of expeditions to various parts of Europe (besides Czech Republic and Slovakia, also to Romania, former Yugoslavia, Poland, and Ukraine), Central Asia (Kirghizstan, Tian Shan and Pamir Mts), Siberia (a journey from the Ural Mts to Lake Baikal), and Mongolia. He karyotyped animals in the field, employing the so-called direct method which was a smart modification (actually a simplification) of a protocol developed in American laboratories in the 1950s. All the steps were made as simple as possible and the most sophisticated part of field equipment was a hand-powered centrifuge. The entire field laboratory fitted into a not very voluminous Honza's grey back-pack, still leaving just enough space for a shirt or two, some underwear, few socks, basic personal necessities, a few wooden live-traps (domestic Chmela type) and a meat can for the just in case. With that grey back-pack, Honza left his home in Brno many times, not returning for weeks or even months. *Omnia mea mecum porto* was his maxim and on one occasion he walked, loaded with that grey back-pack, all the way from Novosibirsk to Akademgorodok, a distance of about 30 km.

Honza never had time in excess. I remember our conversation in November 1989 at his home in Brno when Honza was already a Scientific Secretary. He told me how the mornings were spent for administration and meetings, afternoons for laboratory work, and evenings for writing papers. Since then his responsibilities multiplied and it is a mystery how he managed to draft such an impressive array of textbooks, manuals, monographs and research papers. His younger colleagues from the Institute in Brno compiled bibliographic list at the occasion of Honza's 60th anniversary of birth. The list, attached to the Preface to Honza's festschrift which I was invited to

Jan Zima loved simple, nomadic life in the field. Here he is preparing a meal between two field sessions. Mersin Province, Turkey, October 1993. Photo: Boris Kryštufek

draft (Kryštufek 2012), contains titles of 13 books and monographs, 23 book chapters, 7 edited proceedings, 103 research papers in journals indexed in the Web of Science, and 66 papers in other journals and conference proceedings. Honza co-authored papers with almost 300 researchers from at least 20 different countries (alphabetically): Austria, Czech Republic, France, Germany, Great Britain, Israel, Italy, Japan, Macedonia, Poland, Russia, Slovakia, Slovenia, South Africa, Sweden, Switzerland, The Netherlands, Turkey, Ukraine, and the United States. His research papers appeared in many respected journals, e.g. Annales Zoologici Fennici, Biological Journal of the Linnean Society, Canadian Journal of Biology, Caryologia, Comparative Cytogenetics, Cytogenetics and Cell Genetics, Evolution, Folia Zoologica, Hereditas, Journal of Mammalogy, Journal of Zoological Systematics and Evolutionary Research, Journal of Zoology (London), Mammalia, Mammalian Biology, Molecular Phylogenetics and Evolution, Proceedings of the National Academy of Sciences, and Proceedings of the Royal Society London. Some of his books and monographs are legendary. Mammals of Europe, North Africa and the Middle East (Aulagnier et al. 2008 and subsequent editions), reprinted many times in six European languages, is one of the most popular field guides. Highly influential were reviews on Karyotypes of European Mammals (Zima & Kràl 1984) published in three volumes and covering all mammals on the continent to the west of Ural Mts. This remains a standard work on the topic and is still widely cited.

Besides his active engagement in research, Honza was highly effective organizer and scientific administrator. He managed to navigate two institutes of the Academy of Science through troublesome transitional years. As Director of the Institute of Vertebrate Biology, Honza ensured its scientific excellence through setting research priorities, a skilful and far-sighted support for young scientists and investment into research infrastructure. During the last ten years of life, Honza acted as a member of the Academy Council, and therefore effectively co-supervised and directed Czech Science. Simultaneously, Honza has been a member of scientific councils at eight universities and faculties and at four research institutions in the Czech Republic. He also served as a chairman or a member of supervisory boards at other six research institutes of the Academy of Sciences. Between 1978 and 2011, Honza was active in organising 17 international scientific meetings, either as a (co)organiser, member of organising or scientific committees, or convener of thematic sessions. One of the most prominent events was the organization of the 4th European

Jan Zima was particularly interested in chromosomes of shrews. These tiny mammals die quickly in traps, hence trap lines have to be visited during the night. Here Jan is checking a Rödl live trap (nicknamed Rédlovka) which was widely used in former Czechoslovakia. Meryemana above Trabzon, Turkey, October 1993. Photo: Boris Kryštufek

Congress of Mammalogy in 2003. At the faculties of science of the Charles University and the Masaryk University in Brno Honza has been lecturing vertebrate zoology, biological diversity, evolutionary biology, and genetic methods in zoology. He advised 27 students for final MSc or PhD theses at three universities in the Czech Republic, and served as a reviewer or external examiner for PhD theses at various universities in Switzerland, Sweden, UK, Ukraine, France, Germany, and India. He also co-authored several excellent textbooks in Czech language, most notably the "Vertebrate Zoology" (Gaisler & Zima 2007; 3rd edition was released in 2018) and "Genetic methods in systematic zoology" (Zima et al. 2004). Besides, Honza was the Editor in Chief of the international journal Folia Zoologica. At each of these numerous positions, he was willing to give support beyond the call of his duties. The responsibilities put great pressures upon Honza although, characteristically, he never complained or talked much about problems and the stress to which he was exposed. Although he always fully controlled his emotions, the exhaustion was plainly visible. During winter months Honza, tired as he was, was looking forward to summer holidays which he always spent with the entire family. This was evidently the most joyful event keeping him up for the rest of the year.

I met Honza in summer 1987 during the 4th European Bat Conference in Prague. It was in the welcome party, hosted by Professor Vladimír Hanák, the Chairman of the organizing Committee. The environment of the ancient Karolinum and the excellent service were promising an enjoyable evening, however, they proved to be much more to me. During that evening I established life-long contacts with several Czech mammalogist of my age and Honza was one of them. After a few introductory sentences we quickly found points of common interest and communicated with ease. This was the beginning of a friendship which deeply influenced my life, career and way of thinking. We regularly met during my frequent visits to Brno and Prague, and occasionally Honza appeared in Ljubljana. In those days we also organized several memorable field trips to the Balkans and Asia Minor. We were staying in the field for up to a month, all the time wandering from one place to another in search of mammals. We stayed together days and nights, sharing pleasures of evenings around a campfire, simple self-made meals from the same pot, and shivering in long chilly nights under the open sky. This simple nomadic life, more than worth of living it, additionally strengthened our friendship. Conversations with Honza were far beyond purely zoological issues. Among others, Honza had deep knowledge in history, particularly of the Czech

Hundreds of small mammals were karyotyped in this kind of improvised field laboratory. Jan Zima at work in October 1993 near Zonguldak, Turkey. Photo: Boris Kryštufek

Lands. Bohemia abounds with historical places and I experienced many of them in company of Honza. This gave visits a species flavour, like dinners in the restaurant "Napoleon" in Brno where Napoleon allegedly stayed before the battle at Slavkov (Austerlitz). Of course, Honza took me to this battle place not far from Brno, and from one of the hills explained in great detail how Napoleon achieved his greatest victory in the Battle of the Three Emperors on 2 December 1805. There were other memorable experiences with historic taste as well. In the1980s, the Academy of Sciences still maintained an apartment for visiting scientists in the former Augustinian monastery where Gregor Mendel lived and worked. I had a privilege to stay in the monastery during my visits to Brno, and hiking through the gardens where Mendel performed his experiments which founded modern genetics. One chilly morning, it was 28 November 1989, I left Mendel's monastery, shook hands with Honza in front of the Institute of Systematic and Ecological Biology (as the Institute of Vertebrate Zoology was called at that time), and the driver of the Institute took me to the Prague airport. That same evening the news broadcasted that the Czechoslovak Communist Party announced to hand over the power and dismantle the single party state. The velvet revolution started a week earlier and I witnessed those turbulent days as Honza's guest. A year and a half later, in June 1991, Honza and Miloš Macholán accompanied me at a collecting trip to Macedonia. In a late morning of June 27, while camping in a magnificent molika (*Pinus peuce*) forest on a slope of Mt Pelister, we heard from our car radio that hostilities erupted in Slovenia. It was the first day of the armed conflict which brought down Yugoslavia at the end of the decade. Much has changed during our lifetime.

We were born and raised up in a world very different from the current one and Honza was well aware of this. In 2016, he shared his reminiscences on the changes in a popular article "Od šuplery ke genomu" (From a calliper to a genome) published in the Czech popular journal *Vesmir*. To him, a calliper symbolized an obsolete tool of traditional mammalian taxonomy which was replaced by genomics during our lifetime. Honza pointed at other changes as well in information revolution, funding research, evaluation of scientific production, animal welfare issues, collecting permits, ever expanding human population and rapidly shrinking biodiversity. Changes affected also his favourite field, the karyology. Still providing ground shaking evidence in the 1970s, it became largely obsolete at the turn of the millennium. It was time for synthesis and Honza knew it. His last works were drafted and co-edited with colleagues on the karyology of Turkish mammals (Arslan

& Zima 1994), mole rats (Spalacinae; Arslan et al. 2016), and on shrews (Searle et al. 2019). During our meeting in Prague in 2018 – it was the last one – Honza told with obvious satisfaction that the book "Shrews, Chromosomes and Speciation" was ready for the publisher. He lived just long enough to see the production of the book finished. The Steering Committee of the Atlas of European Mammals (Honza was its member from the very start) unanimously agreed to honour Honza posthumously and dedicate the forthcoming edition of the Atlas to his memory. Honza co-edited and co-authored already the 1st edition of the Atlas (Mitchell-Jones et al. 1999).

Honza was a member of the Advisory Board of Scopolia, the journal of the Slovenian Museum of Natural History (PMS), since 2009. In 1997, he co-authored a paper in Scopolia, reporting on the results of karyological survey conducted during two field trips (September 1990 and June 1991) in the Republic of Macedonia (Zima et al. 1997). Resulting from this survey are 99 individuals of 14 species of shrews, moles and rodents with known karyotypes, preserved as museum vouchers and deposited in PMS. The way the material has been collected and processed was a standard in all field trips we performed with Honza. All the participants were setting traps in the evening and the next morning Honza was karyotyping the animals, while I processed the carcasses as museum vouchers. The museum specimens usually outnumbered the karyotyped material because not all individuals were screened for chromosomes. Huge collections resulted from our collaboration. Voucher specimens were invariably deposited in PMS, while chromosomal slides travelled to Brno. Mammal collection in PMS therefore holds hundreds of small mammals collected in collaboration with Jan Zima in Turkey in October-November 1993 and July 1994, and in Slovenia in May 1988. PMS vouchers karyotyped by Honza hold field numbers with acronyms JZ (Jan Zima) or MM (Miloš Macholán). Specifically, since 1993 Honza was recording his specimens into field catalogue of Miloš. Honza also analysed slides brought to him from my work in Turkey after 2000 and from South Africa and, again, with museum vouchers deposited in PMS. Part of this material was published in various journals. Furthermore, Honza donated to PMS 172 skulls of shrews, bats and rodents collected by him in September-October 1992 in Kirgizstan. This is the only comprehensive collection of mammals from Central Asia in PMS. It also contains six species (*Crocidura suaveolens, Rattus pyctoris, Microtus ilaeus, Clethrionomys centralis, Blanfordimys yuldaschi, Alticola argentatus*) which are otherwise not represented in PMS. The obvious results of collaboration between Honza and PMS would be important for a mammal collection in any natural history museum. In the appalling financial and conceptual deadlock of PMS, Honza was among few external collaborators who helped maintaining a sort of normality in the mammal collection in Ljubljana. He will be deeply missed as a long-standing collaborator and supported of PMS. Those of us, who knew Honza personally, in Ljubljana and abroad, mourn a loss of a great man and a loyal friend, knowing that for our lives we won't meet another like him.

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Boris Kryštufek

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